

ALTITUDE TABLES FOR NAVIGATORS.

Altitude Tables, computed for Intervals of Four Minutes between the Parallels of Latitude 24° and 60°, and Parallels of Declination 24° and 60°, designed for the Determination of the Position Line at all Hour Angles without Logarithmic Computation. By Frederic Ball. Pp. xxxvii+313. (London: J. D. Potter, 1909.) Price 15s. net.

THERE are many circumstances connected with actual navigation which tend to make calculation on board ship difficult to the inexperienced, and we naturally welcome any effort intended to shorten an onerous task and to introduce greater simplicity. The substitution of tables which give an approximate solution of a spherical triangle, involving only a very easy interpolation, is the form that assistance usually takes, and the main feature in the book before us is to make tables, already published, available for wider limits of latitude and declination. As tables extend, and contrive, perhaps, to serve more than one purpose, complications are likely to arise, and however great an ingenuity is displayed in adapting trigonometrical formulæ to tabular arrangement, if simplicity is sacrificed to ingenuity, the ultimate gain is questionable.

Accuracy is as necessary as brevity of calculation, and it is possible to be so enamoured with the apparent advantages of tables that the chances of misusing them are overlooked. We have a slight fear that the author has not sufficiently considered this point. It is a mistake to cumber the work with many rules, which put too great a strain on the memory. For instance, the rules for determining the "name" of the azimuth; using different methods within ten degrees of the meridian or of the prime vertical; interchanging latitude for declination under certain conditions; all these things are apt to be a little burdensome in a moment of stress or excitement. Further than this, there must come a time when tables do not shorten the work, for the number of interpolations becomes excessive. Tables of double entry are always inconvenient to the computer, and when, as in nautical problems, we get three arguments, latitude, declination, and hour angle, for other values than those in the tables, the process becomes very laborious. In an example given, it is necessary to take out four altitudes with arguments of even degrees of latitude, and of declination, and to make three interpolations between these altitudes. Not a word is said about the signs of the corrections, and it is quite possible to use an incorrect sign. In any case, the attention is kept on the strain more than if a direct calculation of altitude was made from the ordinary trigonometrical formula.

We may ask, too, whether the use of logs. for solving the simplest question in rule of three is not a little overdone. We have a problem, in which is given the difference of altitude for 60', and it is required to find the proportional amount for 41'6". The correction is worked out by logs. involving three entries.

But these are little technical points, on which, no doubt, the author's information is a safe guide. He has actual experience to lead him aright, and we are

NO. 2070, VOL. 81]

prepared to surrender our opinion to his practical judgment. On a more important point we are entirely with Mr. Ball. We recognise that this is part of an effort to impress, especially, on the Mercantile Marine, the necessity and the advantage of employing modern methods of tried excellence, and the desirability of abandoning obsolete processes. In these days of rapid locomotion at sea, it is more than ever necessary to produce a correct result in the shortest possible time, and when the expenses of ship management are so enormous, it is a matter of prime importance to know the exact position of the vessel, and to ensure accurate landfall. No time must be lost in groping about to pick up a light, no hesitation must be allowed in determining the ship's course and speed. We trust the author will be successful in enforcing the lesson he has at heart.

OUR BOOK SHELF.

Guide to the Whales, Porpoises, and Dolphins (Order Cetacea), exhibited in the Department of Zoology, British Museum (Natural History), Cromwell Road, London, S.W. Pp. 47. (London: British Museum [N.H.], 1909.) Price 4d.

THE whale-room in the Natural History Museum is one of the most notable and interesting features of the national collection, and the publication of a new guide to its contents calls for a word of comment. Within fifty pages Mr. Lydekker has compressed not only a series of clues to the models, skins, and other preparations, but has furnished students of zoology generally with a most useful and well-illustrated summary of the chief characters of the Cetacea and of their presumable ancestors. In a prefatory note, Dr. Harmer gives reason for confining exhibits of this order to skeletons and models, but it is to be hoped that the public will always have an opportunity of seeing the skins of some of these impressive animals, in order to judge of their proportions. The only feature of this excellent guide that we could have wished more fully expounded, relates to the puzzling vernacular names of whales that are used by fishermen. The members of our own branch of the international sea investigation are often quite at a loss to know what these names correspond to in scientific nomenclature, and their experience is not unique. The matter has some importance since the cetacean fauna of the north-western seas is probably more familiar to fishermen than to naturalists, and the fisherman's records cannot be stated precisely until we are able to understand the vernacular terms in use.

La Naissance de l'Intelligence. By Dr. Georges Bohn. Pp. 350. (Paris: Ernest Flammarion, 1909.) Price 3.50 francs.

THIS book is the latest addition to the well-known series of volumes entitled the "Bibliothèque de Philosophie scientifique," and, in both matter and style, easily reaches the high standard of excellence set by its predecessors. The author restricts his attention to the psychology of the lower organisms, and has succeeded in giving an extremely interesting account of a part of modern comparative psychology hitherto rendered attractive only at the expense of truth. An implacable foe to the "anthropomorphism" of the last generation of comparative psychologists, Dr. Bohn devotes a large part of the earlier chapters of his book to a full statement and vigorous defence of Loeb's theory of tropisms, relieving it of several

serious misconceptions on the part of the critics by distinguishing it from and relating it to the theories of "differential sensibility" and "associative memory," respectively, which were adumbrated by Loeb himself, and are equally necessary to the explanation of many forms of behaviour of lower organisms. From this general standpoint he finds himself in a position to criticise, on the one hand, the modern mechanistic school of the Germans (Beer, Bethe, Uexküll, &c.), who deny *sensations* to animals only to be forced, later on in the argument, to attribute *intellect* to them, and, on the other hand, Jennings and his American supporters, whose theory of "trial and error" is accused (somewhat unjustly, we think) of an anthropomorphic taint. Other interesting points in the book are discussions on the vital rhythms of marine animals, on the criteria of psychism (where the author rejects Yerkes's various criteria—discrimination, docility, initiative—in favour of that suggested by Loeb, viz. associative memory), on the laws of associative phenomena, and on instinct, a term which the author scornfully expels from comparative psychology as being "metaphysical" and useless. Such a method of getting rid of difficulties should not be encouraged. W. B.

The Dyeing and Cleaning of Textile Fabrics. A Handbook for the Amateur and the Professional. By F. A. Owen. Based partly on notes of H. C. Standage. Pp. vi+253. (New York: Wiley and Sons; London: Chapman and Hall, Ltd., 1909.) Price 8s. 6d. net.

A HANDBOOK was published some time ago under some such title as "Every Man His Own Lawyer." To what particular class of people such a book is useful it is not easy to say, but it is fairly safe to assume that the work of the legal profession was not materially lessened by its publication. The book above mentioned might with equal aptness have been termed "Every Man His Own Dyer," but the probability is that the people who are successful in dyeing their own clothes will be even smaller in number than those who are satisfied with the result of their own legal efforts.

The first portion of the book is taken up with such general matters as solution, maceration, &c., and here the author drifts into pharmacy. "The ordinary dose of such infusions is 1 to 2 ozs., three or four times per day." He does not explain, however, the connection between the internal application of infusions and the renovation of garments. His remarks on maceration are equally illuminating. "Its object is usually to impregnate alcohol with the principles of a substance which would be but slowly extracted without the aid of heat, such as the *sun or other warm situation*."

It is a matter for regret that the book should have been published in its present form. It contains many trustworthy and useful recipes for the removal of stains, the cleaning of gloves, &c., but these are associated with so much useless and even misleading matter that their value is greatly discounted.

WALTER M. GARDNER.

Codex of Resolutions adopted at International Meteorological Meetings, 1872-1907. Prepared at the request of the International Meteorological Committee by H. H. Hildebrandsson and G. Hellmann. Pp. 80. (London: H.M.'s Stationery Office, 1909.) Price 1s. 3d.

PROGRESS in the observational sciences depends to a great extent on cooperation among those engaged in collecting and making generally available the observational data, and in no subject is this more true than in meteorology, in which the number of individuals who have to be brought within the meshes of the

general organisation is exceptionally great. Much has been accomplished in the direction of drawing up rules for general guidance, but the lack of a satisfactory index to the various reports in which these are embodied has hitherto made it difficult to find the information bearing on any given point. Recognising this difficulty, the International Meteorological Committee, at its meeting at Southport in 1903, requested the authors to prepare a summary of what had been already accomplished.

The manuscript of the "Codex," which takes the form of a reprint from the minutes of the meetings of all important resolutions, with short explanatory paragraphs interspersed, was submitted for approval at the International Conference of Directors of Observatories and Offices, held at Innsbruck in 1905. Subsequently Dr. Hellmann incorporated the decisions adopted at that meeting, and the German edition of the work was issued by the Royal Prussian Meteorological Institute in 1907. In the English edition, Dr. Shaw has incorporated the resolutions adopted by the International Committee at Paris in 1907, and we have thus a complete summary of the work accomplished by the seventeen international meetings which have been held since 1872, the date of the first conference, held at Leipzig. In view of the large area over which the English-speaking peoples hold sway, the publication of an English edition of the work is very welcome, and should prove of great service to all engaged in meteorological or magnetic work. A full index to the "reports on progress" in particular branches, and to the scientific papers which have appeared as appendices to the minutes of the meetings, is not the least valuable part of the book.

The Balance of Nature, and Modern Conditions of Cultivation: A Practical Manual of Animal Foes and Friends, for the Country Gentleman, the Farmer, the Forester, the Gardener, and the Sportsman. By George Abbey. Pp. xlvii+278. (London: Routledge and Sons, Ltd.; New York: E. P. Dutton and Co., 1909.) Price 7s. 6d. net.

In his preface the author, who appears to have had a very large experience in trapping vermin, states that the only natural-history works he has consulted are "Wood's Natural History" and "The Popular Encyclopædia." All we can say is the more's the pity, for had he undertaken a somewhat wider and more modern course of reading we might have been spared such out-of-date statements as that the hedgehog is a member of the same family as the one which includes the mole and the shrewmouse, or that there are two British species of dormice and also of water-shrews. Such errors are possibly excusable in a writer who is not a zoologist; but what can be said of a so-called sportsman or outdoor naturalist who states that only tame red deer are hunted in England, and that wild roebuck are unknown south of Scotland?

But if the text be bad the illustrations, which the author declares to be diagrammatic, are ten times worse, the climax being reached in the figure of the roebuck, which is represented with a long tail!

As regards the economic portions of the work, the author appears to know more of his subject, and we trust his observations will be found of use to the country gentlemen and farmers for whom the volume is specially intended. We must, however, express surprise at the merciless manner in which he advocates trapping and other methods of destruction; and we are still more concerned at the statement on p. 201 that fish-preservation societies scruple not to destroy the kingfisher, especially if they countenance the use of the cruel pole-trap depicted on the same page.

R. L.